SPECTRUM®

LANCity Cable TV Modem Management Module Guide

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Preface

Use this guide as a reference for the SPECTRUM LANCity Cable TV Modem management software. Before using this guide, you should be familiar with SPECTRUM's functions and navigational techniques as described in the Administration documentation and the Operation documentation. Also become familiar with any network management and hardware requirements described in the LANCity hardware documentation.

For the purposes of this guide, LANCity Cable TV Modem is referred to as "device."

What Is in This Guide

The following chapter descriptions outline the organization of the *LANCity Cable TV Modem Management Module Guide*:

Chapter	Description
Chapter 1 *Introduction*	Describes the device, the management module software, and the model types. This chapter also provides information on accessing device-specific views.
Chapter 2 *Device Views*	Describes the Device views representing the device.
Chapter 3 *Configuration Views*	Describes the Configuration views for the device and the network information provided by the views.
Chapter 4 *Events and Alarms*	Lists the specific events and alarms for the device.
Chapter 5 *Application View*	Describes the Application view and the application specific information for the device.

Conventions

This guide uses the following conventions:

- Menu selections and buttons referenced in text appear in bold; for example, Configuration or Detail.
- Button names appear in shadowed boxes when introducing paragraphs describing their use; for example:

Help

- Menu navigation appears in order of selection; for example, Icon Subviews -> Utilities -> Application.
- Referenced chapter titles and section headings appear in *italics*.
- Referenced documents appear in *bold italics*.
- LANCity Cable TV Modem is referred to as “device.”

Related SPECTRUM Documentation

When using this guide, you should have a clear understanding of SPECTRUM functionality and navigation techniques as described in the Administration documentation, the Operation documentation, and the following documentation:

Report Generator User’s Guide

Getting Started with SPECTRUM for Operators

Getting Started with SPECTRUM for Administrators

How to Manage Your Network with SPECTRUM

This guide also references the following documents:

Routing Services Management Module Guide

DLM Management Module Guide

Other Related Documentation

Refer to the following documentation for more information on managing TCP/IP-based networks:

Martin, James, Kathleen Kavanagh Chapman, and Joe Leben. *Local Area Networks: Architectures and Implementations*, 2d ed. Englewood Cliffs, NJ: Prentice Hall, 1994.

Michael, Wendy H., William J. Cronin, Jr., and Karl F. Piper. *FDDI: An Introduction to Fiber Distributed Data Interface*. Woburn, MA: Digital Press, 1992.

Rose, Marshall T. *The Simple Book: An Introduction to Management of TCP/IP-based Internets*. Englewood Cliffs, NJ: Prentice Hall, 1991.

Stallings, William. *Data and Computer Communications*, 4th ed. New York: Macmillan Publishing Company, 1994.

Tanenbaum, Andrew S. *Computer Networks*, 3d ed. Englewood Cliffs, NJ: Prentice Hall, 1996.

Chapter 1

Introduction

What Is in This Chapter

This chapter introduces the SPECTRUM Management Module for the LANCity Devices. It describes the following:

- LANCity Cable TV Modem
- SPECTRUM Support
  - Accessing SPECTRUM Views from the Device Icon
  - Accessing Device-Specific Subviews
  - SPECTRUM Views Roadmap

LANCity Cable TV Modem

The LANCity Cable TV modems act as bridges, transparently bridging Ethernet onto the cable medium. The modems have 2 ports: a cable (coax) port, and an Ethernet AUI port. They can be connected to a router if a routed network is necessary. The LANCity Cable TV Modem supports SNMP for standard network management features.

The Modems also supports connection throttling (performance on connection can be limited to an operator specified datarate, ie. a 10 megabit modem could be set to perform at only 1 megabit/ sec.), and secure virtual channels between the headend controller and modem.

The following product lines are available:

- Personal cable modems - for a single user or a small workgroup
- Business cable modems - allow for the bridging of ~1024 nodes
- Operator Solutions - for the cable operator, consists of a headend controller and controlling PC

SPECTRUM Support

SPECTRUM allows you to monitor and manage network devices such as hubs, routers, and switches through software models of these devices and their associated applications. The models you create reside in the SpectroSERVER database, where they are updated continually with information gathered by polling the actual devices.

Models are represented visually by icons that appear in various views in SpectroGRAPH. Icons representing devices provide at-a-glance, color-coded status information. Both device icons and application icons also provide mouse-click access to other views that contain detailed configuration and performance information.

SPECTRUM management modules are software packages that provide templates for creating software models of particular devices or families of devices. Management modules also include templates for modeling the applications supported by these devices. Each template, called a model type, specifies attributes that correspond to objects defined in the Management Information Bases (MIBs) that govern the operation of the device or application to be modeled. The model type names for the LANCity device are:

- lcLCB
- lcLCH
- lcLCP

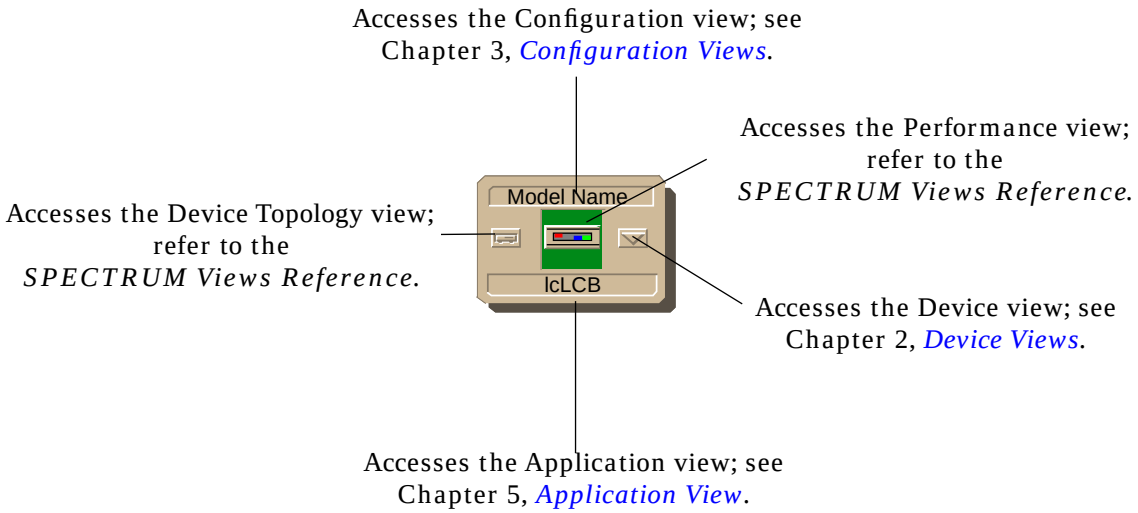
Accessing SPECTRUM Views from the Device Icon

The Device icon provides access to SPECTRUM views which display device-specific information. Access these views using double click zones (Figure 1-1, Page 1-3) or Icon Subviews menus (Figure 1-2,Page 1-4).

To access the Icon Subviews menu as shown in Figure 1-2 (Page 1-4), do the following:

1. Highlight the icon.
2. From the View menu, select Icon Subviews or click the applicable mouse button (middle or right). Refer to the *SPECTRUM Icons Reference* for information on configuring your mouse.

Figure 1-1. Using Double-Click Zones to Access SPECTRUM Views


Accesses the Configuration view; see Chapter 3, Configuration Views.
Accesses the Performance view; refer to the SPECTRUM Views Reference.
Accesses the Device Topology view; refer to the SPECTRUM Views Reference.
Model Name
IcLCB
Accesses the Device view; see Chapter 2, Device Views.
Accesses the Application view; see Chapter 5, Application View.

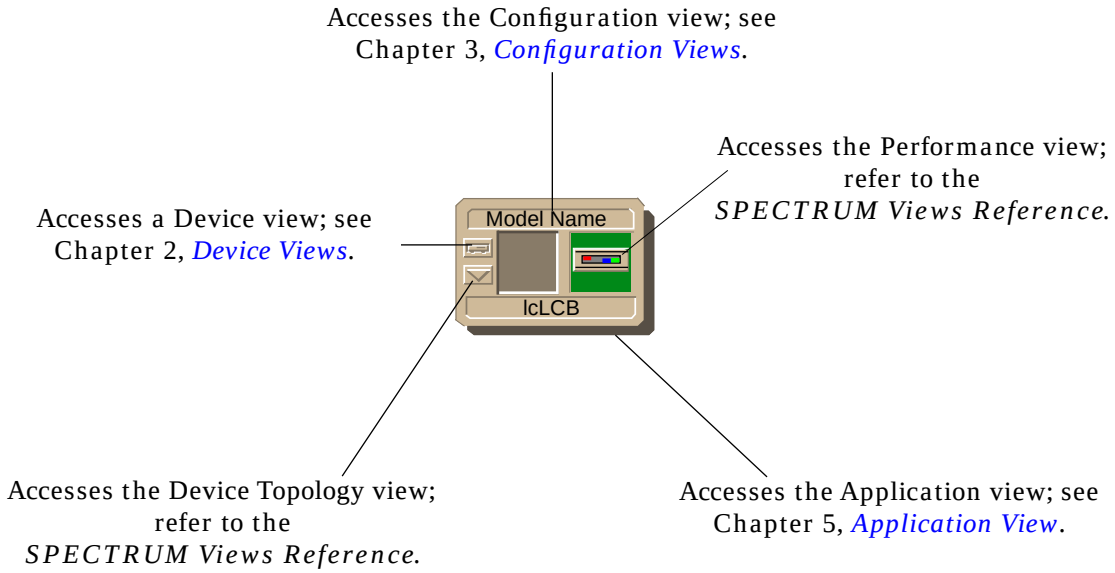
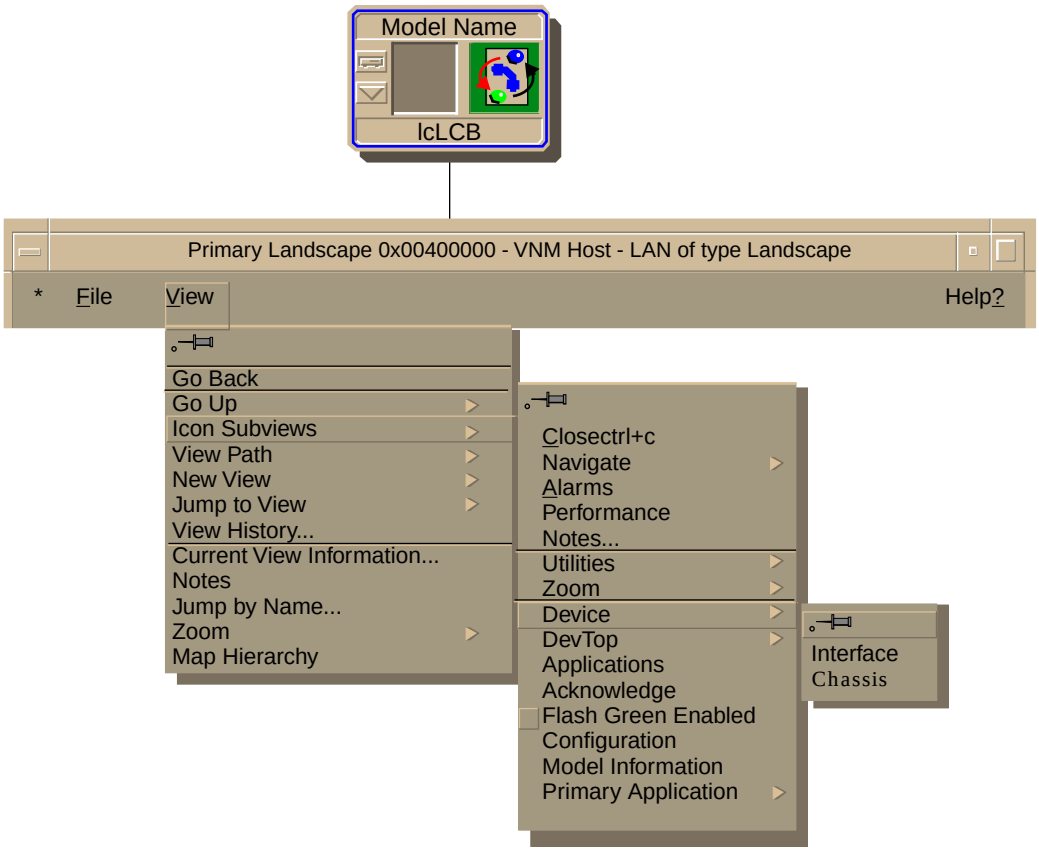

Accesses the Configuration view; see Chapter 3, Configuration Views.
Accesses the Performance view; refer to the SPECTRUM Views Reference.
Accesses a Device view; see Chapter 2, Device Views.
Model Name
IcLCB
Accesses the Device Topology view; refer to the SPECTRUM Views Reference.
Accesses the Application view; see Chapter 5, Application View.

Figure 1-2. Using the Icon Subviews Menu to Access SPECTRUM Views



Accessing Device-Specific Subviews

Icon Subviews menus provide access to views that display device-specific information. Figure 1-3 (Page 1-5)shows an example of an Icon Subviews menu for an Application label on the Chassis Module icon located in the Chassis Device view. The device-specific Icon Subviews menu selections are described under the applicable section within this guide. Common menu selections are described in the Administrator's documentation and the Operator's documentation.

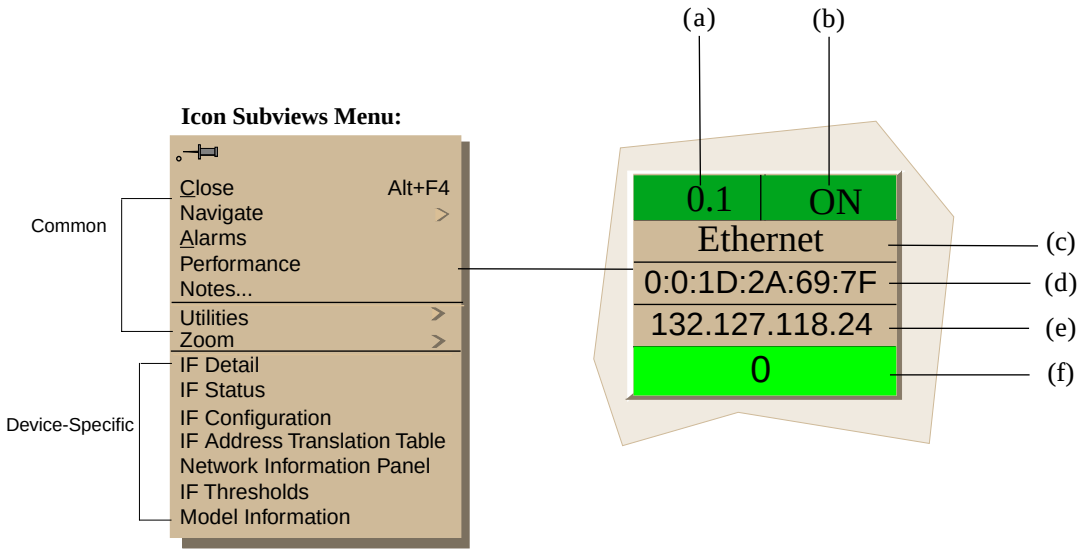
To access the Icon Subviews menu using the View menu, do the following:

1. Highlight the icon.
2. From the View menu select Icon Subviews.

To access the Icon Subviews menu using the mouse button, do the following:

1. Position the mouse pointer on the icon.
2. Click the applicable mouse button (middle or right). Refer to the *SPECTRUM Icons Reference* for information on configuring your mouse.

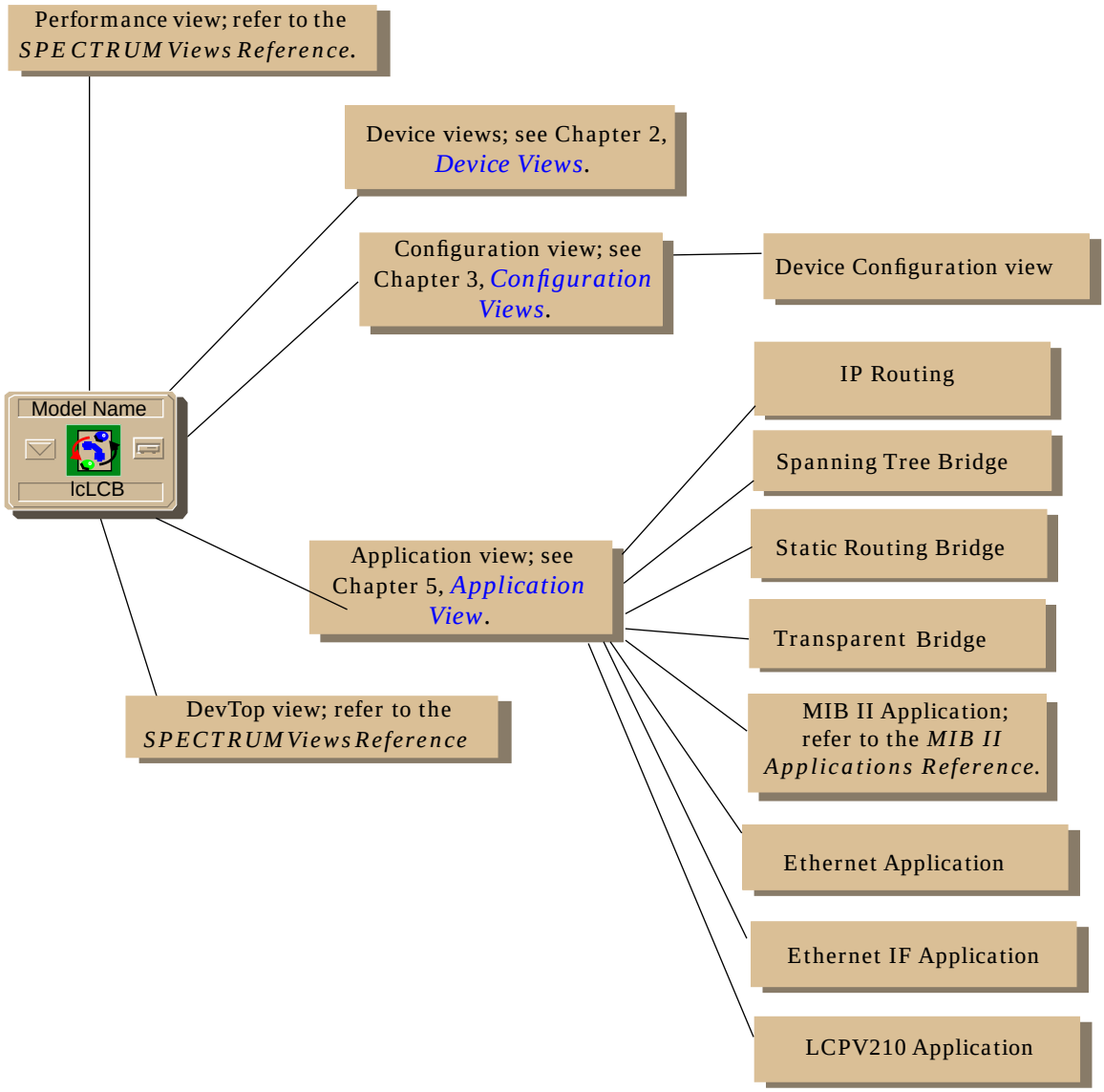
Figure 1-3. Accessing Device-Specific Subviews



SPECTRUM Views Roadmap

Figure 1-4 (Page 1-3)shows a "roadmap" of SPECTRUM views for this device. These views are accessible from double-click zones (Figure 1-1, Page 1-3) and Icon Subviews menus (Figure 1-2, Page 1-4 and Figure 1-3, Page 1-5).

Figure 1-4. SPECTRUM Views Roadmap


Performance view; refer to the *SPECTRUM Views Reference.*
Device views; see Chapter 2, *Device Views*.
Configuration view; see Chapter 3, *Configuration Views*.
Device Configuration view
Model Name
lcLCB
IP Routing
Spanning Tree Bridge
Static Routing Bridge
Application view; see Chapter 5, *Application View*.
Transparent Bridge
DevTop view; refer to the *SPECTRUM Views Reference*
MIB II Application; refer to the *MIB II Applications Reference.*
Ethernet Application
Ethernet IF Application
LCPV210 Application

Chapter 2

Device Views

What Is in This Chapter

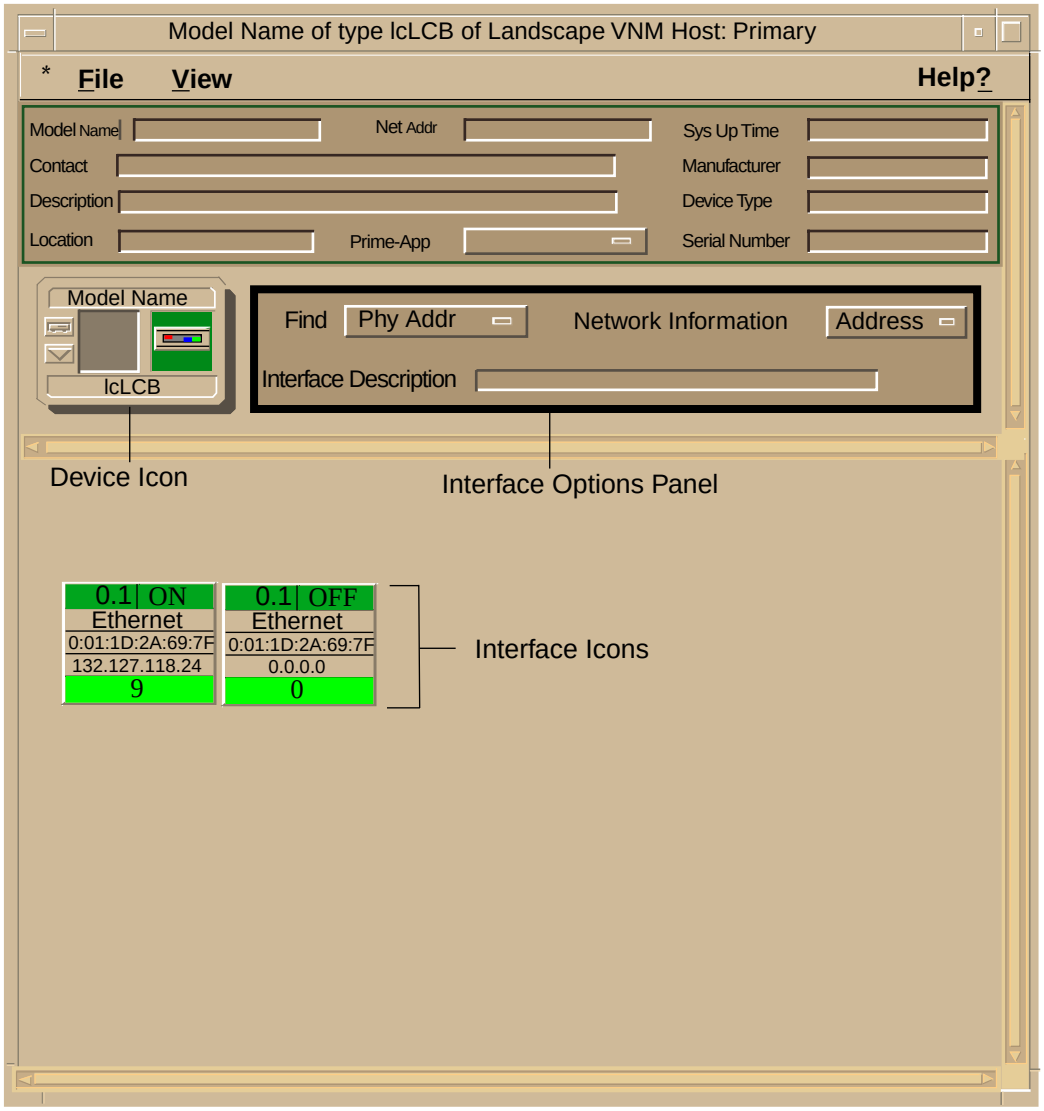
This chapter describes the Interface Device view and subviews available for the LANCity Cable TV Modem devices.

See Chapter 1 *Introduction*, for information on *Accessing SPECTRUM Views from the Device Icon* and *Accessing Device-Specific Subviews*.

Interface Device View

This view provides dynamic configuration and performance information for each interface on this device. If the configuration changes, SPECTRUM modifies the Device view after the next polling cycle to reflect the new configuration. This view also provides a Device icon which allows you to monitor the device and access other device-specific views. This section describes the Interface Options panel and the Interface icons displayed in the Interface Device view. Figure 2-1 (Page 2-2) shows an example of the Interface Device view.

Figure 2-1. Interface Device View



Interface Icon

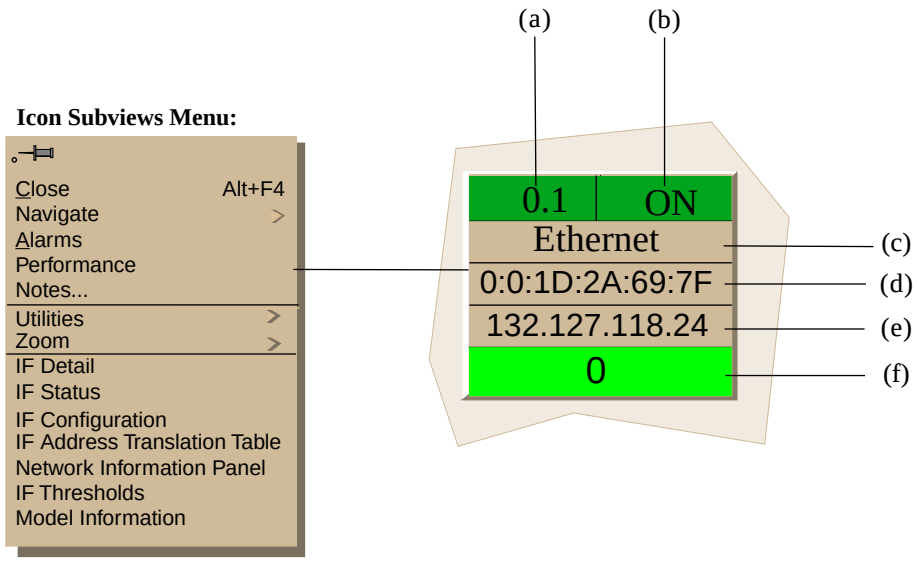
These icons represent the interfaces or ports of the device. The icons identify the type of interface or port and provide statistical information. Figure 2-2 Page 2-3)shows an example of an interface icon, its Icon Subviews menu, and its labels/double-click zones.

NOTES

The callouts (a through f) displayed in the illustration below identify the label and the view to which it provides double-click access. Example: Administrative Status Label/Interface Status View displays the status of this interface and provides double-click access to the Interface Status view.

The Icon Subviews menu displayed in the illustration is specific to the icon selected.

Figure 2-2. Interface Icon



a. Interface Label

b. Administrative Status Label/Interface Status View

c. Interface Type Label/Interface Configuration View

d. MAC Address Label/Interface Address Translation Table

e. Network Information Label/Network Information Panel

f. Gauge Label/Performance view

Interface Icon Subviews Menu

Table 2-1 describes the Interface device-specific subviews menu selection. See Chapter 1, *Introduction*, for information on *Accessing Device-Specific Subviews*.

Table 2-1. Interface Icon Subviews Menu

Menu Selection	Descriptions
IF Detail	Opens the Interface Detail view described in
IF Status	Opens the Interface Status view described on Page 2-4.
IF Configuration	Opens the Interface Configuration view described in Chapter 3, *Configuration Views*.
IF Address Translation Table	Opens the Interface Address Translation Table described on Page 2-5.
Network Information Panel	Opens the Network Information Panel described on Page 2-6.
IF Thresholds	Opens the Interface Thresholds view described on Page 2-6.
Model Informationq	Opens the Model Information view described in the *SPECTRUM Views Reference*.

Interface Label

This label displays the interface number.

Administrative Status Label

This label displays the status of this interface. Table 2-2 and Table 2-3 list the possible states for the application selected.

Table 2-2. Administrative Status for the Physical or MIB II Application

Color	Status	Description
Green	ON	Port is operational.
Blue	OFF	Port is off.
Yellow	TST	Port is in the test mode.

Table 2-3. Administrative Status for the Bridging Application

Color	Status	Description
Green	FWD	Bridge port is forwarding.
Blue	DIS	Port is disabled.
Magenta	LST	Bridge is in the listening mode.
Magenta	LRN	Bridge is in the learning mode
Orange	BLK	Bridge port is in the blocking mode.
Red	BRK	Bridge port is broken.
Blue	???	Status is unknown.

Double-click this label to access the Interface Status view which provides the following information on the status of the interface:

Operational Status
Displays the current operational state of the interface is displayed (On, Off, or Testing).

Administrative Status
Allows you to select the desired operational state of the interface (Default, On, Off, or Testing).

Interface Type Label

This label displays the interface type. Double-click this label to open the Interface Configuration view described in Chapter 3, *Configuration Views*.

MAC Address Label

This label displays the MAC address of the interface. Double-click this label to open the Interface Address Translation table described below.

Interface Address Translation Table

This table cross-references device IP addresses to device MAC (Physical) addresses for selected nodes between networks. Double-click any column entry to open an address-specific Address Translation Table Information view. The Interface Address Translation Table provides the following information:

Interface Index
A list of interfaces held by the Chipcom device.

Physical Address
Displays the physical address of the Chipcom interface.

Network Address
Displays the IP address assigned to the interface.

Network Information Label

This label displays user-selectable network information (Address, Name, or Mask). The default is Address.

To change this label's display, use the Interface Options panel described later in this chapter, or do the following:

1. Double-click the label to open the Network Information dialog box.
2. Click the network information entry you wish to have displayed.
3. Click OK.

Gauge Label

This label displays the performance statistic determined by the Gauge Control Panel for this interface. (See the *Gauge Control Panel* later in this chapter for more information.) Double-click this label to open the Performance view described in the *SPECTRUM Views Reference*.

Interface Threshold View

The Interface Threshold view is accessed by selecting Thresholds from the Icon Subviews menu. The Interface Threshold view allows a user to set statistical thresholds on a per interface basis with the File/Save All Changes feature. Thresholds can be set for the following statistics:

- Load
- Packet Rate
- Error Rate
- % Discarded

Interface Options Panel

This area of the Interface Device view allows you to modify the presentation of a highlighted Logical Interface icon. Double-click a non-text area of this panel to open the Gauge Control Panel, described later in this section. The Interface Options panel provides the following information:

Find
Allows you to find an entry using one of the following selections: Physical Address, IP Address, Type or Net Name.Your selection opens a text entry dialog box. In the dialog box, enter the specified search string.

Network Information
Allows you to select the type of information displayed in the Network Information label of the highlighted icon. Possible selections are ADDRESS, NAME, or MASK.

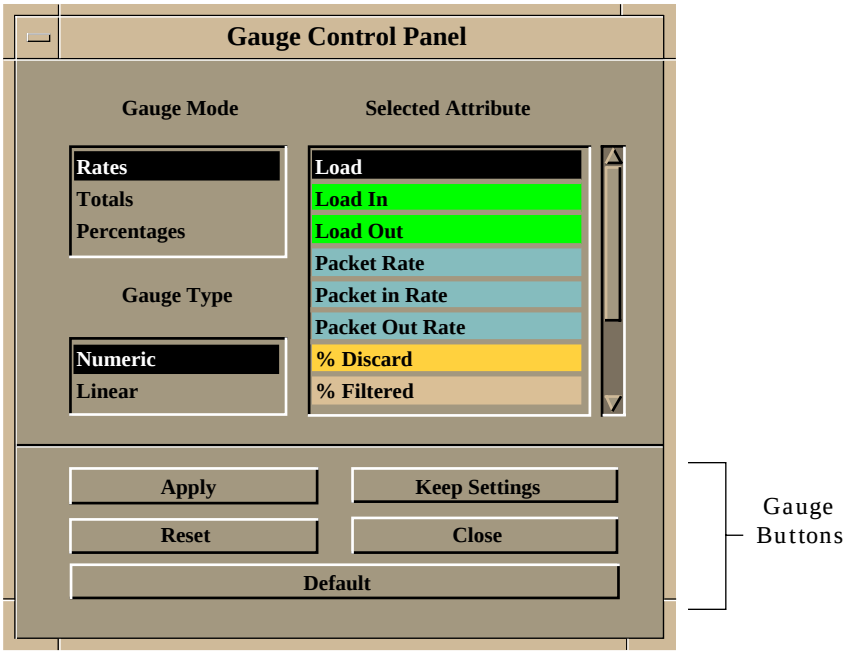
Interface Description
Provides a description of the highlighted interface. If no interface is highlighted, this field is empty.

Gauge Control Panel

This panel (Figure 2-3) allows you to change the type of statistical information displayed on the Gauge label of the Interface icon. To access the Gauge Control Panel, double-click the background of the Interface Options panel or do the following:

1. Highlight the Interface Options panel.
2. From the View menu, select Icon Subviews -> Gauge Control Panel.

Figure 2-3. Gauge Control Panel



The Gauge Control Panel provides the following:

- Gauge Mode
- Selected Attribute
- Gauge Type
- Gauge Buttons

Gauge Mode

This area allows you to select the type of information shown on the Gauge Label of the interface icon: Totals, Rates, or Percentages. The Percentages selection displays the percentage of the selected interface compared to the rest of the interfaces.

The color displayed on the Gauge Label depends upon the particular mode and statistical attribute selected. Table 2-4 and Table 2-5 provide a list of attributes and their corresponding colors for the Totals mode and Rates mode respectively.

Table 2-4. Totals Gauge Mode: Attributes and Corresponding Color

Selected Attribute	Color
In Errors	Orange
Out Errors	Orange
In Packets	Blue
Out Packets	Blue
Unknown Protocols	Yellow
In Discards	Tan
Out Discards	Tan
In Octets	Green
Out Octets	Green

Table 2-5. Rates Gauge Mode: Attributes and Corresponding Color

Selected Attribute	Color
Load	Green
Load In	Green
Load Out	Green
Packet Rate	Blue
Packet In Rate	Blue
Packet Out Rate	Blue
Error Rate	Orange
Error In Rate	Orange
Error Out Rate	Orange
Discard Rate	Tan
Discard In Rate	Tan
Discard Out Rate	Tan

Selected Attribute
Aallows you to select the statistical attribute displayed on the Interface icon's Gauge label. The label changes color to reflect the attribute selected.

Gauge Type
Allows you to select either a numeric display on the Gauge Label.

Gauge Buttons
The following describes the Gauge buttons:

Apply

Applies the current settings to the Gauge label temporarily, but does not save the settings.

Reset

Returns the settings to the previously saved values.

Keep Settings

Saves the current settings while SpectroGRAPH is running. Settings return to default when you restart SpectroGRAPH.

Close

Closes the Gauge Control Panel.

Default

Returns the settings to the SPECTRUM default.

Configuration Views

What Is in This Chapter

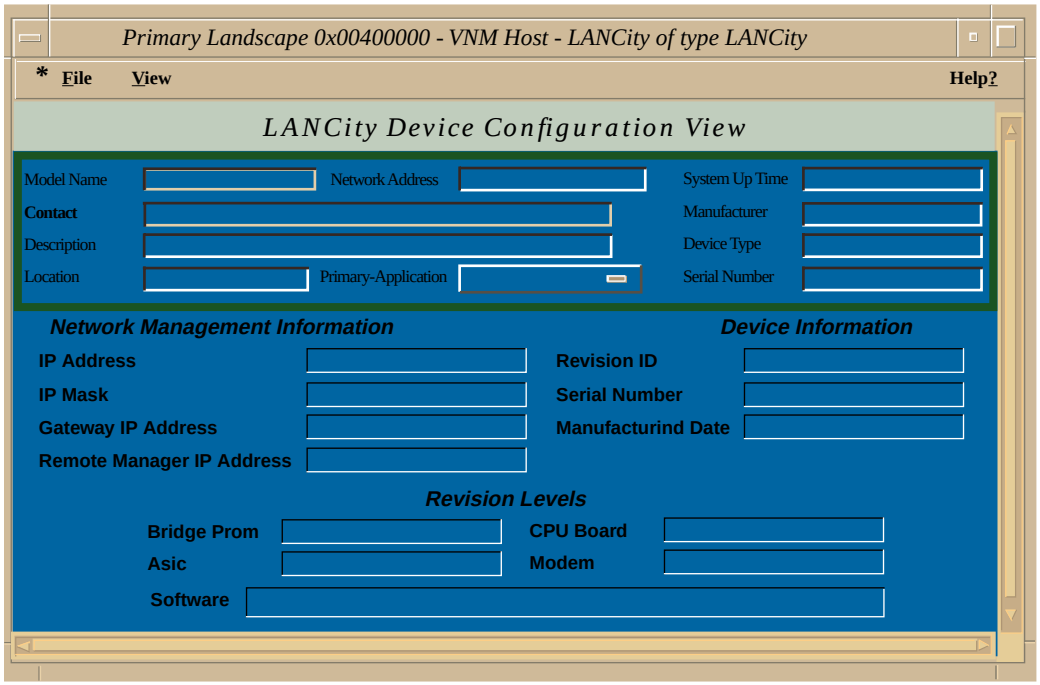
This chapter describes the following Configuration views available for the LANCity Cable TV Modem. These views display network configuration and operating information for the device and its interfaces.

- Device Configuration view
- Interface Configuration view

Device Configuration View

Figure 3-1 shows the Device Configuration view for this device. This view provides the following information on the configuration and operational status of this device.

Figure 3-1. Device Configuration View



Network Management Information

This section of the Configuration view provides network IP information for the device.

IP Address
The IP Address of the device used on the ethernet and the CATV ports.

IP Mask
The IP Address mask for the lan ports for this device.

Gateway IP Address
The IP Address of the gateway (router) used to reach the remote manager defined by lcRemoteNmIpAddress - this gateway must be in a directly connected IP network.

Remote Manager IP Address
The IP Address of a remote manager reachable via the gateway device defined by lcNmGwIpAddress. A route entry is created for lcRemoteNmIpAddress using lcNmGwIpAddress as the next hop.

Device Information

This section of the Configuration view provides device-specific information.

Revision ID
The hardware revision identification.

Serial Number
The device's serial number.

Manufacturing Date
The date the device was made.

Revision Levels

This section of the Configuration view provides revision information for the device.

Bridge Prom
The revision level of the bridge prom.

Asic
The revision level of the asic.

Software
The revision level of the bridge software.

CPU Board
The revision level of the cpu board.

Modem
The revision level of the modem.

Interface Configuration View

This view provides the following information on the configuration and operating status of this device:

Operation Status
The current operational state of the port (On, Off, or Testing).

Administration Status
The desired operational state of the port (On, Off, or Testing).

Last Change
The system uptime value when the port interface entered its current operational state.

IP Address/Network Mask
A list of the user-defined names and IP addresses for the interface.

Physical Address
The ethernet (MAC) address of the port.

Bandwidth
The estimated bandwidth of the interface measured in bits per second. For interfaces that do not vary in bandwidth or for which no accurate estimate can be made, a nominal bandwidth is provided.

Packet Size
The largest packet that can be transmitted or received by the port measured in octets.

Queue Length
The length of the outbound packet queue in packets.

Chapter 4

Events and Alarms

What Is in This Chapter

This chapter lists the types of events and alarms generated by the LANCity Cable TV Modem and provides any probable cause messages corresponding to these alarms.

Device Events and Alarms

Table 4-1 lists the SPECTRUM database directory path (in bold) and the messages displayed for the Event Log and Alarm Manager when applicable.

Table 4-1. LANCity Events and Alarms

Message in the Event Log	Alarm View Probable Cause Message
CsEvFormat/Event01fc0071 {d “%w- %d %m-, %Y - %T”} - Upgrade Complete received from {m} of type {t} error level ({I 1}) error id ({S 2}). event {e}.	No probable cause message.

Table 4-1. LANCity Events and Alarms (Continued)

Message in the Event Log	Alarm View Probable Cause Message
CsEvFormat/Event01fc0072 {d "%w- %d %m-, %Y - %T"} - Upgrade Failure received from {m} of type {t} error level ({I 1}), error id ({S 2}). event {e}.	CsPCause/Prob01fc0072 Firmware upgrade has failed.
CsEvFormat/Event01fc0073 {d "%w- %d %m-, %Y - %T"} - Error Handler received from {m} of type {t} error level ({I 1}), error id ({S 2}). event {e}.	CsPCause/Prob01fc0073 An error handler alarm has occurred.

Chapter 5

Application View

What Is in This Chapter

This chapter describes the following applications for the LANCity Devices:

- LCPV210App
- Ethernet IF Application

The Application view allows you to access increasingly detailed views of network information for the applications supported by this device.

Common Applications

These devices support the following common applications which are described in the *Bridging Applications Reference*, the *MIB II Applications Reference*, and the *Miscellaneous Applications Reference*:

- Gen Routing (GenRtrApp)
  - IP Routing (IP2RtrApp)
- MIB-II (SNMP2_Agent)
  - ICMP (ICMP_App)
  - System (System2_App)
  - UDP (UDP2_App)
- Bridge App
  - Spanning Tree (Span_Tree_App)
  - Static (Static_App)
  - Transparent (Transparnt_App)

Device Application View

This view (accessible from the device icon) shows the common and device-specific applications supported by these devices and provides access to application-specific information.

See Chapter 1, *Introduction*, for information on *Accessing SPECTRUM Views from the Device Icon* and *Accessing Device-Specific Subviews*.

Figure 5-1 shows an example of an Application view in the icon mode. Figure 5-2 shows an example of an Application view in the list mode.

To change the display mode, from the View menu, select Mode -> List or Icon.

Figure 5-1. Device Application View (Icon Mode)

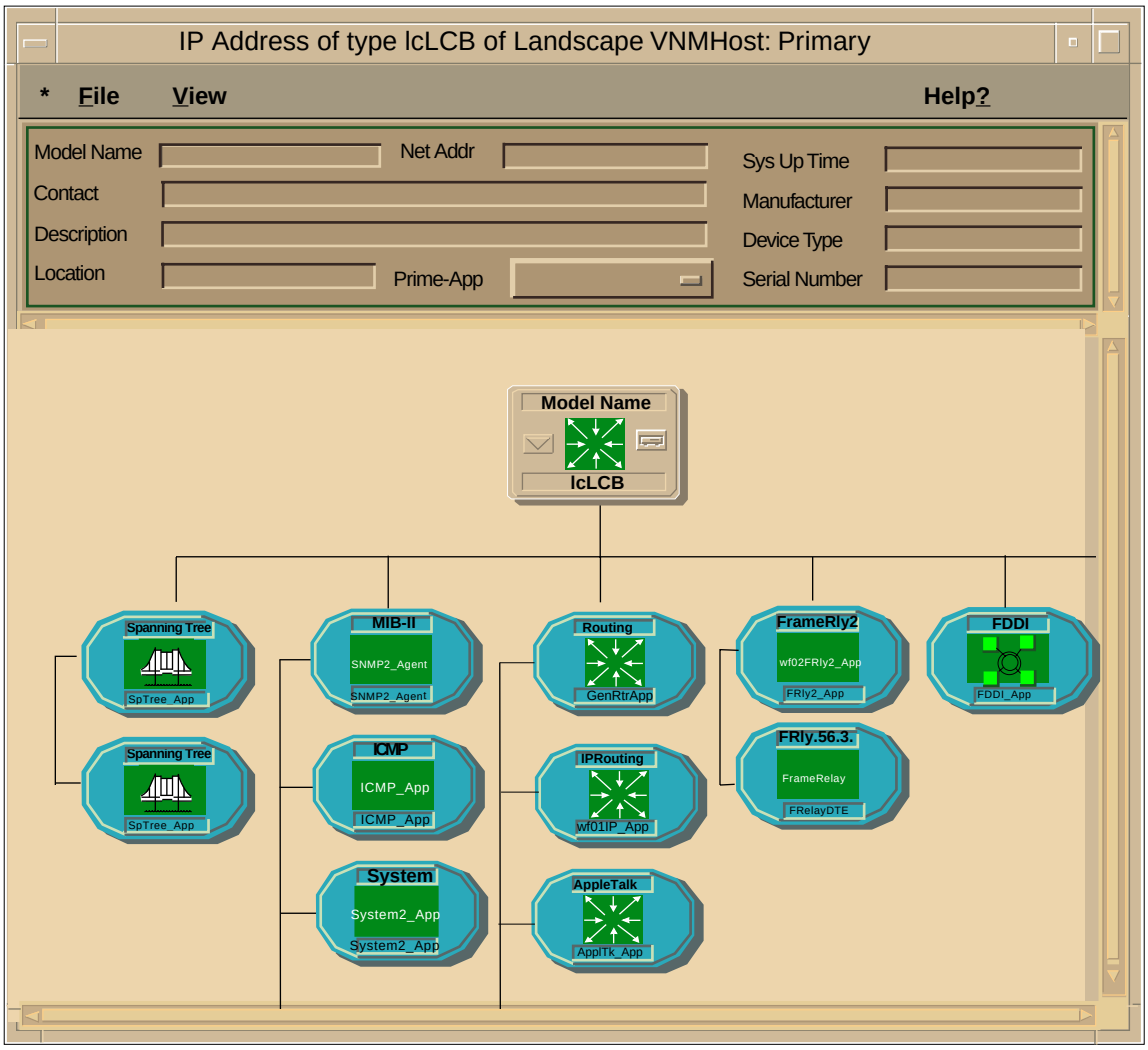
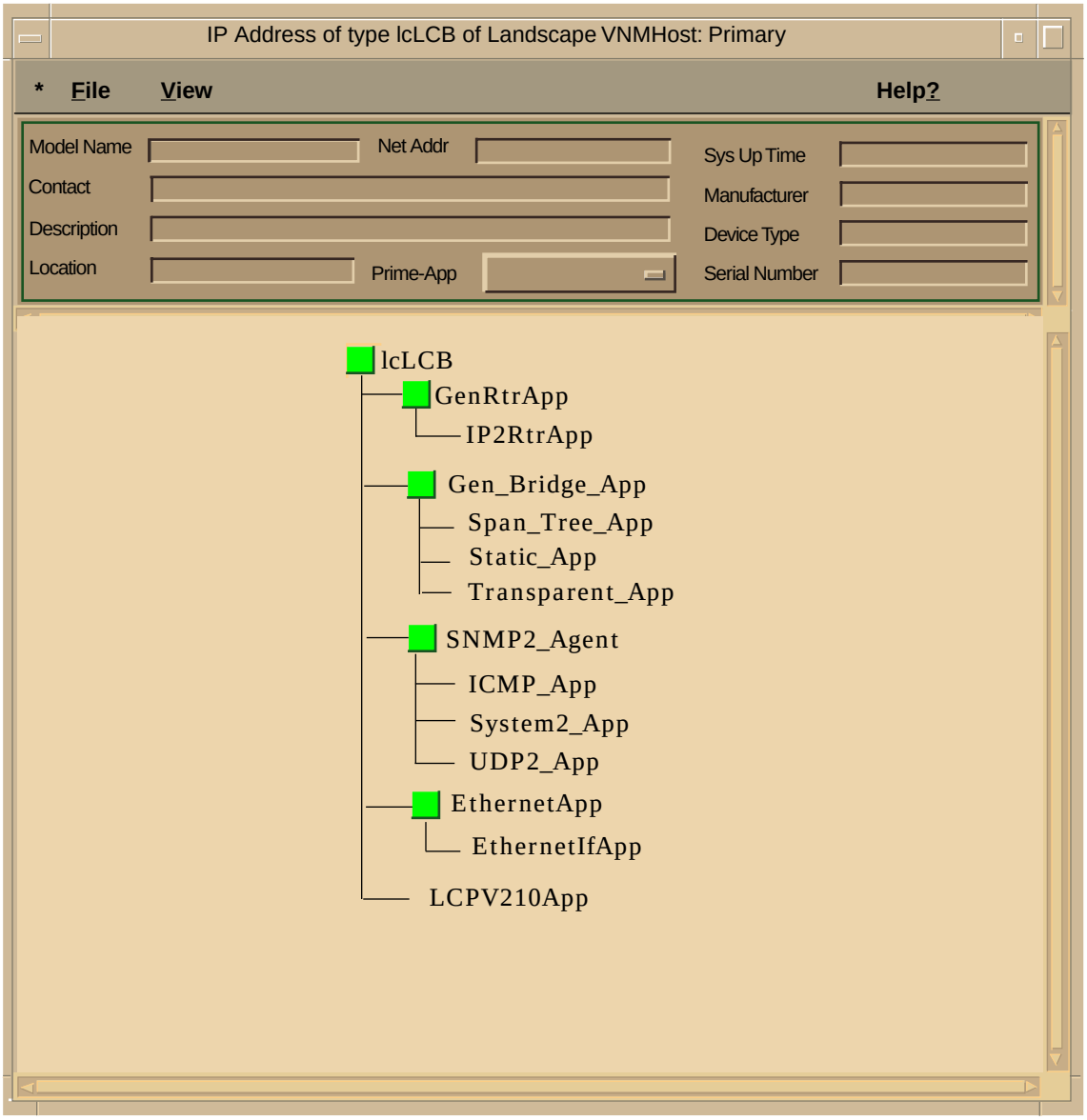


Figure 5-2. Device Application View (List Mode)



LCPV210 Application

This section describes the LCPV210 Application supported by this device. The LCPV210 Application uses LCPV210App as the corresponding model type. Table 5-1 lists the application-specific subviews available from the Icon Subviews menu for this application.

Table 5-1. LCPV210 Application Icon Subviews Menu Selections

Menu Selection	Description
Configuration	Opens the Device Configuration view described in Chapter 3, *Configuration Views*.
ASIC Rates	Opens the ASIC Rates Performance view (Page 5-5).
Device Control	Opens the Device Control view (Page 5-6).
Download	Opens the Download view (Page 5-7).
EERPOM	Opens the Serial EEPROM view.
Filter	Opens the Filter Security Group view (Page 5-9), the Software Filtered Frames view (Page 5-10), and the Filter Control Table view (Page 5-10).
Frequency Scan	Opens the Frequency Scan view (Page 5-11).
Health	Opens the Health Parameters view, and the Health Summary view (Page 5-12).
LCN Parameters	Opens the LCN Parameters Control view (Page 5-13).
Rx/Tx Coefficient Table	Opens the Receive/Transmit Coefficient Table view (Page 5-14).
Sonic	Opens the Sonic Error view (Page 5-15), Sonic Rate view (Page 5-16), and the Sonic Statistics view (Page 5-16).
Statistics	Opens the Auto Install Statistics view (Page 5-17), Miscellaneous Statistics view (Page 5-18), Modem Control view (Page 5-19) and the Unilink Protocol view (Page 5-21).
Summary	Opens the Maintenance Summary view (Page 5-23), and the Performance Summary view (Page 5-25).
Support History Table	Opens the Support History Table (Page 5-26).
Trap	Opens the Trap Destination view (Page 5-27) and the Trap Type view (Page 5-27).
Model Information	Opens the Model Information view described in the *SPECTRUM Views Reference*.

Asic Rate Performance View

The Asic Rate Performance view provides you with statistical information associated with the Asic chipset on the cable modem.To access this view do the following:

1. Within the Application view, highlight the LCPV210App Icon

2. From the Icon Subview menu, select Asic Rates.

This view displays the following information:

Received Bits Per Second
Displays the rate at which the bridge has received bits from the CATV over the interval defined by lcstatstime.

Transmitted Bits Per Second
Displays the rate at which the bridge has transmitted bits to the CATV over the interval defined by lcstatstime.

Packets Received
Displays the rate at which the asic has transmitted packets (in packets per second) over the time interval defined by lcstatstime.

Packets Transmitted
Displays the rate at which the asic has received packets (in packets per second) over the time interval defined by lcstatstime.

Packets Filtered
Displays the rate at which the asic has filtered packets (in packets per second) over the time interval defined by lcstatstime.

Packet Collisions
Displays the rate at which the asic has detected collisions (in collisions per second) over the time interval defined by lcstatstime.

Packets Detected CRC
Displays the rate at which the asic has detected CRC errors (in CRC per second) over the time interval defined by lcstatstime.

Packets Deferred
Displays the rate at which the asic has deferred transmission (in deferrals per second) over the time interval defined by lcstatstime.

Device Control View

The Device Control view provides you with selectable or editable fields that allow you to: 1) Reset Device, 2) Enable pacerHello, 3) Write NVRAM contents to Flash. You can also view device control information. To access this view do the following:

1. Within the Application view, highlight the LCPV210App Icon

2. From the Icon Subview menu, select Device Control.

This view displays the following information:

Ethernet Devices Supported By Workgroup Bridge
Displays the number of ethernet devices supported by this workgroup bridge.

Ethernet Devices In Filtering Database
Displays the number of ethernet devices in the filtering database.

Snmp Access
This button determines whether the bridge is snmpreadonly or snmpreadwrite.

Non-Pacer Hello
This button causes a unit which is NOT pacer to participate in hello exchange.

Pacer Hello
This button causes a unit which is pacer to participate in hello exchange.

Sonic Packets Transmitted
Displays the number of sonic packets transmitted.

Sonic Packets Received
Displays the number of sonic packets received.

Asic Packets Transmitted
Displays the number of asic packets transmitted.

Asic Packets Received
Displays the number of asic packets received.

Transmit Merit Limit
Displays the highest value that can be put on a packet that is transmitted.

Maximum Transmit Merit
Displays the highest value that has been put on a packet that is transmitted.

Receive Merit Limit
Displays the highest value that can be put on a packet that is received.

Maximum Receive Merit
Displays the highest value that has been put on a packet that is received.

Write to Flash
This button allows the NVRAM contents to be written to flash.

Reset Device
This button resets the device.

Download View

The Download view provides you with selectable fields that allow you to set IP Address of download server, the file name to be downloaded, the protocol of choice for download, and the ability to initiate the download from the SPECTRUM station. This view also shows the current download status.To access this view do the following:

1. Within the Application view, highlight the LCPV210App Icon

2. From the Icon Subview menu, select Download.

This view displays the following information:

Load Server IP Address
Displays the IP Address of the load server for this device.

Gateway IP Address
Displays the IP Address of the gateway to reach the load server.

Start Down Load
This button causes the device to request a download from the load server.

Load File
Displays the load file to request for downloading.

Load Protocol
This button is used for downloads.

Down Load Status
Displays the download status for this device.

Filter Security Group View

The Filter Security Group view provides you with configurable filter security information. To access this view do the following:

1. Within the Application view, highlight the LCPV210App Icon
2. From the Icon Subview menu, select Filter -> Security Group.

This view displays the following information:

Security Group Filtering
This button determines whether security group filtering is enabled.

Packet Type Filtering
This button determines whether packet type filtering is enabled.

Current Security Group Filtering Type
This button determines which type of security group filtering is in use for this device.

Current Security Group
Displays the security group(s) to which this device belongs.

Broadcast Filtering
This button determines whether broadcast filtering is enabled.

Multicast Filtering
This button determines whether multicast filtering is enabled.

Packet Type 1-8
Displays the 16-bit pattern which will be matched against the ethertype field for received frames.

Software Filtered Frames View

The Software Filtered Frames view provides you with Asic and sonic filter information and the ability to reset software filtering statistics. To access this view do the following:

1. Within the Application view, highlight the LCPV210App Icon
2. From the Icon Subview menu, select Filter -> Software Filtered Frames.

This view displays the following information:

ASIC Local LAN
Displays the number of frames filtered because source and destination were both on the same side of the bridge (both on CATV) since power on.

ASIC Filtered Type
Displays the number of frames filtered because the ethertype field of the frame matched one defined to be filtered.

ASIC Filtered Type 1-8
Displays the number of frames filtered because the ethertype field of the frame matched packet filter 1 - 8.

SONIC Local LAN
Displays the number of frames filtered because source and destination were both on the same side of the bridge (both on ethernet) since power on.

SONIC Filtered Type
Displays the number of frames filtered because the ethertype field of the frame matched one defined to be filtered.

SONIC Filtered Type 1-8
Displays the number of frames filtered because the ethertype field of the frame matched packet filter 1 - 8.

Packets Filtered in a Different Security Group
Displays the number of frames filtered because they were in a different security group to the bridge.

Reset Software Filtering Statistics
This button Reset all software filtering statistics.

Filter Table Control View

The Filter Table Control view provides you with configurable filter table information. To access this view do the following:

1. Within the Application view, highlight the LCPV210App Icon
2. From the Icon Subview menu, select Filter -> Table Control.

This view displays the following information:

Current Dynamic Entries
Displays the number of dynamic entries currently in the filter database.

Max Dynamic Entries Allowed
Displays the maximum number of dynamic entries allowed in the filter database.

Max Dynamic Blocks Used
Displays the maximum number of dynamic entry blocks ever used in the filter database.

Current Static Entries
Displays the number of static entries currently in the filter database.

Max Static Entries Allowed
Displays the maximum number of static entries allowed in the table.

Max Trie Table Chains Depth
Displays the maximum depth of the Trie table chains reached.

Frequency Scan View

The Frequency Scan view provides you with complete information on the device being managed. To access this view do the following:

1. Within the Application view, highlight the LCPV210App Icon
2. From the Icon Subview menu, select Filter -> Frequency Scan.

This view displays the following information:

Starting Rx Frequency
Starting receiving frequency.

Current Rx Frequency
Current receiving frequency.

Ending Rx Frequency
Ending receiving frequency.

Scan Increment
Scan increment.

Number of Scans Made
The number of scans made.

Current Frequency Scan State
The current frequency scan state.

Assumed Frequency Delta from Channel
The assumed frequency delta from channel.

Health Summary View

The Health Summary view provides you with at-a-glance color indicators that represent the Ethernet and CATV networks associated with the managed device.To access this view do the following:

1. Within the Application view, highlight the LCPV210App Icon
2. From the Icon Subview menu, select Health -> Summary.

This view displays the following information:

Ethernet Load Indicator
Displays the Ethernet network load.

Ethernet Network Load
Displays the ethernet network load.

Ethernet Packets Per Error
Displays the ethernet packet per error.

Ethernet Up Indicator
Indicates that the interface is up.

CATV Load Indicator
Displays the unilink network load.

CATV Network Load
Displays the unilink network load.

MAC Packets Per Mac Error
Displays the MAC packets for MAC error.

Unilink Up Indicator
Indicates that the interface is up.

Pacer Change Indicator
Displays the change of pacer indicator.

Retain/Lost Block Sync
Displays the block sync per lost block sync.

Block Sync Established
Indicates block sync established.

Min/Max Loop Delay Level (dbs)
Displays the minimum/maximum loop delay levels in the database.

Max Delta Between Block Sync And Loop Delay
Displays the Max delta between block sync and loop delay in database.

Min/Max Block Sync Levels Since Boot Up
The minimum/maximum block sync levels since bootup in the database.

Min/Max Block Sync Levels Since Block Sync
Displays the minimum/maximum block sync levels since block sync in the database.

LCN Parameters Control View

The LCN Parameters view provides you with the configuration information set on the LCN server. To access this view do the following:

1. Within the Application view, highlight the LCPV210App Icon
2. From the Icon Subview menu, select LCN Parameters.

This view displays the following information:

Authorized NMS IP Address
The authorized NMS IP Address.

Authorized NMS MAC Address
The authorized NMS MAC Address.

Snmp Read Only
Snmp read only.

Install Override
Skip auto-equalize.

Frequency Scan Override
The frequency scan override.

Network Access Priority
The control variable for Network Access Priority.

Network Accessed
The network accessed.

Max Ethernet Nodes
The maximum ethernet nodes.

Max Bandwidth Returned
The maximum bandwidth allowed when transmit onto cable (return path).

Max Bandwidth Forwarded
The maximum bandwidth allowed onto ethernet (from Cable Forward Path).

Max Transmit Burst Type
The control variable for maximum transmit burst size.

Max CDM
The maximum CDM.

Key ID
The key identification.

Change Key
The change key.

Working Key ID
The name of the authorization key currently in use for authorizing configuration data from the LCN.

Last Key ID
The name of the previous authorization key for authorizing configuration data from the LCN.

Transmit Frequency
The transmit frequency.

Receive Frequency
The receive frequency.

Headend Reference
The headend reference.

Max Loop Delay
The maximum loop delay.

Digest Option
The digest option.

Min Public Contention %
The per cent available for minimum public contention.

Receive/Transmit Coefficient Table View

The RX/TX Coefficient Table provides you with two tables; the Receive Coefficient Table and the Transmit Coefficient Table that list the coefficient indexes and values for those indexes.

To access this view, select Rx/Tx Coefficient Table from the Icon Subviews menu. This view will display the following information:

Receive Coefficient Table
This area of the RX/TX Coefficient Table provides the following information:

Index
The entry index.

Coefficient
The receive coefficient value.

Transmit Coefficient Table
This area of the RX/TX Coefficient Table provides the following information:

Index
The entry index.

Imagined Coefficient
The imaginary part of the transmit coefficient.

Real Coefficient
The real part of the transmit coefficient.

Sonic Error View

The Sonic Errors view provides you with a statistical graph representing the Errors associated with the Sonic chip.

You can access the Sonic Errors view by selecting Sonic -> Errors from the Icon Subviews menu. This view displays a color-coded pie chart. Table 5-2 provides the Sonic Errors information displayed by the pie chart.

Table 5-2. Sonic Error View

Statistic	Description
Alignment	The number of frames received by the sonic which had alignment errors.
Byte Count	The number of times the sonic ethernet controller detected an error in the length field of a frame to be transmitted.
CRC	The number of frames received by the sonic which had crc errors.
Excess Collisions	The number of frames for which the sonic detected more than 16 collisions.
Excess Deference	The number of frames for which the sonic had been deferring for 3.2ms when transmission was aborted.
Fifo Underrun	The number of frames for which the sonic was unable to access the bus before the fifo emptied.
Frames Too Big	The number of frames received by the sonic which were discarded as too long.
Receive Errors	The number of frames received by the sonic which were discarded due to receive errors.
Missed Packets	The number of frames received by the sonic which were discarded due to lack of buffers, FIFO overrun or receiver disabled.

Sonic Rate View

The Sonic Rates view provides you with a statistical graph representing the Rates for the Sonic chip.

You can access the Sonic Rates view by selecting Sonic -> Rates from the Icon Subviews menu. This view displays a color-coded pie chart. Table 5-3 provides the Sonic Rates information displayed by the pie chart.

Table 5-3. Sonic Rate View

Statistic	Description
Received Bits	The rate at which the bridge has received bits from the ethernet over the interval defined by lcstatstime.
Received Packets	The rate at which the bridge has received packets from the ethernet (in packets per second) over the time interval defined by lcstatstime.
Transmitted Bits	The rate at which the bridge has transmitted bits to the ethernet over the interval defined by lcstatstime.
Transmitted Packets	The rate at which the bridge has transmitted packets to the ethernet (in packets per second) over the time interval defined by lcstatstime.

Sonic Statistics View

The Sonic Statistics view provides you with the statistical information associated with the Sonic chip in the cable modem. You can also reset the Sonic statistic counter on the device.

To access this view, select Sonic -> Statistics from the Icon Subviews menu. This view will display the following graph information:

Transmissions with 1 Collision
The number of frames transmitted via the ethernet port of the bridge since power on which have experienced a single collision.

Multicasts Received
The number of multicast frames received via the ethernet port of the bridge since power on.

Frames Transmitted With Deference
The number of frames transmitted via the ethernet port of the bridge since power on which have been deferred due to carrier sense.

Broadcasts Received
The number of broadcast frames received via the ethernet port of the bridge since power on.

Frames Received
The number of frames received via the ethernet port of the bridge since power on.

Transmissions With Multi-Collision
The number of frames transmitted via the ethernet port of the bridge since power on which have experienced multiple collisions.

Frames Transmitted
The number of frames transmitted via the ethernet port of the bridge since power on.

Collisions Detected
The number of collisions detected on the ethernet port of the bridge since power on.

Sonic Rate

Click this button to open the Sonic Rate view.

Sonic Errors

Click this button to open the Sonic Errors view.

Reset Sonic Statistics
Click on ResetNow to reset all sonic statistics.

Auto Install Statistics View

The Auto Install Statistics view provides you with auto install statistics on LoopDelay, Frequency levels, and Power Levels.

To access this view, select Statistics -> Auto Install from the Icon Subviews menu. This view will display the following information:

Loop Delay (Bytes)
Current loop delay when known in bytes.

Determine Loop Delay OK
Able to determine loop delay counter.

Average Loop Delay Power
The average loop delay power over 8 power samples in decibel-millivolt.

Min Loop Delay Received
The minimum loop delay received since block sync established in decibel-millivolt.

Max Loop Delay Received
The maximum loop delay received since block sync established in decibel-millivolt.

Current Transmit Level
The current transmit power level setting in decibel-millivolt.

Default Transmit Level
The default transmit power level setting in decibel-millivolt.

Levels Calibrated
Receive levels valid flag.

Transmit Frequency
Transmit frequency.

Receive Frequency
Receive frequency.

Average Block Sync Level
The average block sync level since last loop delay average in decibel-millivolt.

Maximum Received Block Sync
The maximum block sync received since block sync established in decibel-millivolt.

Minimum Received Block Sync
The minimum block sync received since block sync established in decibel-millivolt.

Maximum Block Sync Received Since Boot
The maximum block sync received since boot.

Minimum Block Sync Received Since Boot
The minimum block sync received since boot in decibel-millivolt.

Receive Equalization Merit
Receive equalization figure of merit bigger is better.

Transmit Equalization Merit
Transmit equalization figure of merit bigger is better.

Miscellaneous Statistics View

The Miscellaneous Statics view provides you with miscellaneous statistics and information about the device being managed.

To access this view, select Statistics -> Miscellaneous from the Icon Subviews menu. This view will display the following information:

Date and Time
Displays the date and time in the format mm/dd/yy hh:mm:ss.

No System Buffers Available
The number of times a management packet could not be transmitted because no system buffers were available.

Packet Type to Count
The packet type to count.

ASIC Frames Transmitted
The transmitted done status for non-system frames.

ASIC Frames Received
The frames received from asic that were forwarded.

SONIC Frames Transmitted
The number of sonic frames that were transmitted.

SONIC Frames Received
The number of sonic frames that were received.

Modem Control View

The Modem Control view provides you with information and statistics associated with the RF modem interface on the managed device. This information includes: Power levels, BlockSync, Coefficiency, LoopDelay, Pacer Status, and miscellaneous statistics.

To access this view, select Statistics -> Modem from the Icon Subviews menu. This view will display the following information:

Current Transmit Power Level
The current transmit power level setting - a/d format.

Default Transmit Power Level
The default transmit power level setting - a/d format.

Average Block Sync IF Level
The average block sync IF level since last LD average - a/d format.

Average Block Sync RF Level
The average block sync RF level since last LD average - a/d format.

Block Sync Receive Level Sample Count
The block sync receive level sample count.

Average Block Sync Demodulator Output
The average demodulator output level x1000 from block sync packet.

BS Demodulator Output Standard Deviation
The demodulator output standard deviation x1000 from block sync packet.

Average Loop Delay IF Level
The average loop delay IF over 8 power samples - a/d format.

Average Loop Delay RF Level
The average loop delay RF power over 8 power samples - a/d format.

Loop Delay Receive Level Sample Count
The loop delay receive level sample count.

Average Loop Delay Demodulator Output
The average loop demodulator output level x1000 from LD packet.

LD Demodulator Output Standard Deviation
Demodulator output standard deviation x1000 from LD packet.

Loop Delay Packets Attempted
Determines the loop delay packets attempted to send.

Loop Delay Packets Received
Determines the loop delay packets received.

Bad Loop Delay Packets
Unable to determine loop delay counter.

Minimum Loop Delay(BSI)
The minimum loop delay when known is BSI format.

Initial Loop Delay(BSI)
The initial loop delay when known in BSI format.

Maximum Loop Delay(BSI)
The maximum loop delay when known is BSI format.

Transmit Equalization Count
Transmit equalization count since last boot.

Receive Equalization Count
Receive equalization count since last boot.

Pacer Status
This field is true when pacer is selected.

Current Block Sync State
The block sync state machine current state.

Periodic Bid State
The periodic bid state.

Default lcb Transmit Coefficient
The default lcb transmit coefficients.

Default lcb Receive Coefficient
The default lcb receive coefficients.

Default lcp Transmit Coefficient
The default lcp transmit coefficients.

Default lcp Receive Coefficient
The default lcp receive coefficients.

Cable Transmit Byte Limit Rollover
Transmit byte limit rollover for cable (1,000,000,000 bytes.)

Ethernet Transmit Byte Limit Rollover
Transmit byte limit rollover for ethernet (1,000,000,000 bytes.)

Dedicated Member Add Threshold
The allocator's add threshold to become dedicated member.

Dedicated Member Drop Threshold
The allocator's drop threshold to become dedicated member.

Maximum Frame Size for Concatenation
The maximum size frame in bytes for concatenating multiple packets.

Minimum Public Contention Size (slots)
The allocator's minimum public contention size in slots.

Receive/Transmit Coefficient Table

Receive Coefficient Table
This table provides the following information:

Index
The entry index.

Coefficient
The receive coefficient value.

Transmit Coefficient Table
This table provides the following information:

Index
The entry index.

Imagined Coefficient
The imaginary part of the transmit coefficient.

Real Coefficient
The real part of the transmit coefficient.

Unilink Protocol View

The Unilink Protocol view provides you with the information associated with Pacer, LoopDelay, and BlockSync. You also have the ability to clear these statistics by selecting the Reset button at the bottom of the view.

To access this view, select Statistics -> Unilink Protocol from the Icon Subviews menu. This view will display the following information:

Block Sync Statistics
This area of the Unilink Protocol view provides the following information:

Achieved Block Sync
Achieved block sync counter.

Block Sync State
Block sync state machine current state.

Lost Block Sync
Lost block sync.

Timeout Establishing Sync
Timeouts establishing sync counter.

Loop Delay Statistics
This area of the Unilink Protocol view provides the following information:

Loop Delay Ok
Able to determine Loop Delay counter.

Loop Delay Bad
Unable to determine Loop Delay counter.

Loop Delay (bytes)
Unable to determine loop delay counter.

Reset Statistics
Reset all unilink protocol statistics.

Pacer Statistics
This area of the Unilink Protocol view provides the following information:

Lost Pacer Not Allowed
Loss of pacer due to not allowed counter.

Lost From Block Sync State
Lost from block sync state.

Excessive Pacer Attempts
Number of times a unit tried too often to become pacer.

Timeout From Last NonPacer
Timeout from last nonpacer seen.

Losses From No Activity
Loss of pacer due to no activity counter.

Pacer Status
This is true when pacer is selected.

Last Pacer
This is true when we were last pacer.

Pacer Address
Source address of current pacer.

Preferred Pacer
This is true when preferredPacer is selected. Not true when nonPreferredPacer is selected.

Pacer Allowed
This is true when pacerAllowed is selected. Not true when pacerNotAllowed is selected.

Maintenance Summary View

The Maintenance Summary view provides you with dB levels, BlockSync, Error log entries, and Pacer statistics information of the managed device. You can reset these counters by selecting the reset button at the bottom of the view.

To access this view, select Summary -> Maintenance from the Icon Subviews menu. This view will display the following information:

Measured Loop Delay
The loop delay as measured by the bridge.

System Up Time
The bridge up time from MIB-II.

Bridge Resets
The number of times the bridge reset.

Delta Levels (Db)
This area of the Maintenance Summary view provides the following information:

Max/Min Block Syn To Loop Delay
Delta seen between maximum and minimum loop delay levels in database.

Max/Min Loop Delay
Delta seen between maximum and minimum loop delay levels in database.

Max/Min Rcvd Since Bootup
Delta seen between maximum and minimum received levels since bootup in database.

Max/Min Rcvd Since Block Sync
Delta seen between maximum and minimum received levels since block sync in database.

Block Sync
This area of the Maintenance Summary view provides the following information:

Time Out Establishing Block Sync
The number of times a unit timed out trying to establish block sync.

Block Sync Lost
The number of times block sync was lost by the unit.

Retained/Lost Block Sync
Ratio of retained block sync to lost block sync.

Error Log Entries
This area of the Maintenance Summary view provides the following information:

Total
The number of entries in the field support history log.

Level 2
The number of level 2 entries in the field support history log.

Level 3
The number of level 3 entries in the field support history log.

Level 4
The number of level 4 entries in the field support history log.

Pacer Statistics
This area of the Maintenance Summary view provides the following information:

Excess Pacer Attempts
the number of times a unit tried too often to become pacer.

Pacer Changed
The number of times a different pacer was detected.

Maintenance Summary Reset
Resets all of the lcpV2MaintSummary group.

Unilink Down Count
This chart shows the unilink interface down counter.

Ethernet Down Count
This chart shows the ethernet interface down counter.

Performance Summary View

The Performance Summary view provides you with statistical information about the CATV, Ethernet, and Errors associated with the managed device. You can reset these counters by selecting the reset button at the bottom of the view.

To access this view, select Summary -> Performance from the Icon Subviews menu. This view will display the following information:

Ethernet Statistics

Data Packets Transmitted To Ethernet
The number of data packets transmitted to ethernet.

Data Packets Received From Ethernet
The number of data packets received from ethernet.

Data Filtered From Ethernet
The amount of data filtered from ethernet.

Data Forwarded To Ethernet From CATV
The amount of data forwarded to ethernet from CATV.

Ethernet Errors
This area of the Performance Summary view provides the following information:

Total Transmit/Receive Errors
Sum of ethernet errors detected.

Retry Percentage
Percentage of ethernet transmits which were retried.

Packets Processed/Received
Ratio of packets processed to errors on ethernet.

CATV Statistics
This area of the Performance Summary view provides the following information:

Data Packets Transmitted to CATV
The number of data packets transmitted to CATV.

Data Packets Received From CATV
The number of data packets received from CATV.

Data Filtered From CATV
The amount of data filtered from CATV.

Data Filtered To CATV From Ethernet
The amount of data filtered to CATV from ethernet.

CATV Errors
This area of the Performance Summary view provides the following information:

MAC Errors
CATV MAC errors detected.

Retry Percentage
Percentage of CATV transmits which were retried.

MAC Pkts Processed/MAC Errors
Ratio of MAC packets processed to MAC errors on CATV.

Performance Summary Reset
Resets all of the lcpV2PerfSummary group.

Support History Table

The Support History Table provides you with entry index, type of entry, module that sent entry, and first and last time of entry. It also includes the parameters associated with the log entry index.

To access this view, select Support History Table from the Icon Subviews menu. This view will display the following information:

Next Entry
The next entry to use in the table.

Entry
Information about a specific history entry.

First Log
The time of day the first log entry of this type was created.

Last Log
The time of day the last log entry of this type was created.

Event Count
The number of times this event was repeated consecutively.

Error Level
The error level.

Error ID
The error identifier.

Module ID
The module ID calling the error handler.

Trap Destination View

The Trap Destination view provides you with a trap table that can be modified (but not added to) by double-clicking on an entry to bring up the Trap Destination IP view.

To access this view, select Trap -> Destination from the Icon Subviews menu. This view will display the following information:

Trap Destination Index
The index into the Trap Destination Table.

Trap Destination IP
The IP Address to which the trap will be sent.

Trap Destination Status
Controls whether traps are sent to this address.

Trap Type View

The Trap Type view provides you with a table listing each trap type and whether it is being sent or not. Each trap type status is configurable by double-clicking on its entry to bring up the Trap Type Status view.

To access this view, select Trap -> Type from the Icon Subviews menu. This view will display the following information:

Trap Type
The index in the Trap Type Table.

Trap Status
Controls whether the type of trap is sent.

Ethernet IF Application View

The Ethernet IF Application view is accessed by highlighting the Ethernet IF icon in the Application view window. Select the Icon Subviews menu from the View menu to access the following Ethernet IF view.

Detail View

This view provides three color-coded pie charts (Table 5-4 through Table 5-6) presenting a breakdown of Ethernet Application statistics. Each statistic is presented as a total amount since the LANCity was initialized and as a

percentage of overall traffic. You can access this view by selecting Detail from the Icon Subviews menu or through the Detail View button in the Ethernet Application Performance View. Three buttons at the bottom of each pie chart select the way in which the data is represented (Total, Delta, and Accum.) Another button, Clear, works in conjunction with the Accum button. For more information on these buttons, refer to the *SPECTRUM GIB Editor Guide*.

Table 5-4. Transmit Success Counts Pie Chart

Statistic	Description
Single Coll	The number of successfully transmitted frames for which transmission was inhibited by exactly one collision.
Multi Coll	The number of successfully transmitted frames for which transmission was inhibited by more than one collision.
Defer Trans	The number of frames for which the first transmission attempt was delayed because the medium was busy.

Table 5-5. Frame Errors Pie Chart

Statistic	Description
FCS	The number of frames received that are an integral number of octets in length but do not pass the FCS check.
Frame Length	The number of frames received that exceed the maximum permitted frame size.
MAC Receive	The number of frames that failed reception due to an internal MAC sublayer receive error.
Alignment	The number of frames received that are not an integral number of octets in length and do not pass the FCS check.

Table 5-6. Transmit Fail Errors Pie Chart

Statistic	Description
Late Coll	The number of times that a collision was detected later than 51.2 microseconds into the transmission of a packet.
Excess Coll	The number of frames for which transmission failed due to excessive collisions.

Table 5-6. Transmit Fail Errors Pie Chart

Statistic	Description
MAC Transmit	The number of frames that failed transmission due to an internal MAC sublayer transmit error.
Carrier Sense	The number of times that the carrier sense condition was lost or never asserted when attempting to transmit a frame.

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